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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,627	01/07/2004	Anton Rodi	AR-R14	5973

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EXAMINER	
NGUYEN, HOAI AN D	

ART UNIT	PAPER NUMBER
2858	

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/752,627	RODI, ANTON	
	Examiner	Art Unit	
	Hoai-An D. Nguyen	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☒ Claim(s) *2 and 5-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/7/04 & 5/24/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it is not limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claims 2 and 6 are objected to because of the following informalities: they recite the limitation "the common reference", which has never been defined in the independent claim 1. There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.

4. Claim 5 is objected to because of the following informalities: it recites the limitation "the average value" and "the common reference", which have never been defined in the independent claim 1. Appropriate correction is required.

5. Claim 7 is objected to because of the following informalities: they recite the limitation "the particular values" and "their reference", which have never been defined in the independent claim 1. There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.

6. Claim 8 is objected to because of the following informalities: it recites the limitation "the non-symmetrical, calculated distances", "the particular values", "the common reference" and "their particular reference", which have never been defined in the independent claim 1. There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. See the above objections to claim 8.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-6, 9-11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (US 5,943,639).

Tanaka et al. teach a displacement detection apparatus including an error correction system comprising:

With regard to claim 1, a measuring device (FIG. 1, displacement detecting apparatus) comprising a sensor arrangement (FIG. 1, sensors 102 and 103) to record values, in particular angles and linear values, which produces at least two signals (FIG. 1, signal a and signal b) phase-shifted to one another as a continuous function and in which these signals are supplied to a measured value processor (FIG. 1, CPU 114), wherein an adjustment unit (FIG. 1, correction circuit 118) is connected in series to the sensor arrangement (FIG. 1, sensors 102 and 103) which adjusts the amplitudes of the phase-shifted signals to one another and/or produces from phase-shifted signals signals which are out of phase by about 90°, which are then evaluated and outputted for further processing (Column 7, lines 28-51, from column 8, line 29 to column 9, line 6 and column 12, lines 61-62).

With regard to claim 2, adjustment takes place at the times when the phase-shifted signals intersect the common reference (From column 12, line 63 to column 13, line 11).

With regard to claim 3, the phase-shifted sensor signals have sinusoidal values (Column 12, lines 61-62).

With regard to claim 4, for any phase-shifted values (FIG. 1, signal a and signal b) the 90° phase-shift results from addition or subtraction of the values (FIG. 1, column 7, lines 28-51 and column 8, lines 29-52).

With regard to claim 5, the common reference is created by producing the average value of at least two values phase-shifted by 90° (From column 12, line 61 to column 13, line 11).

With regard to claim 6, the common reference (reference voltage) is firmly set (Column 7, lines 32-51).

With regard to claim 9, the values resolved by an interpolator are calculated by taking into account their adjustment speed (Column 2, lines 31-44) and, if they fluctuate from one another, their amplitudes are adjusted accordingly (Column 3, lines 53-58 and column 8, lines 53-56).

With regard to claim 10, the distances of the sensors (FIG. 1, sliding sensors 102 and 103) from one another are chosen independently of the scale division (FIG. 1, measuring scale 101) (Column 7, lines 30-32).

With regard to claim 11, the same measuring device (FIG. 1, measuring scale 101) is used for varying scale divisions (Column 10, lines 50-56).

With regard to claim 13, the adjustment unit (FIG. 1, correction circuit 118) and preferably also the whole electronics unit including the sensor arrangement (FIG. 1, sensors 102 and 103) are located on an ASIC equipped with fixed hardware functions for an integrated or mounted encoder (FIG. 1, correction circuit 118 and sensors 102 and 103 are located on the displacement detecting apparatus) (Column 7, lines 28-51).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. in view of Farrow (US 5,793,243).

Tanaka et al. teaches all that is claimed as discussed in the above rejection of claims 1, 3 and 4, but he does not specifically teach the following:

- For non- symmetrical, calculated amplitudes of the particular values, their reference is suitably adjusted in the adjustment unit.

However, Farrow teaches a method of stabilizing an electronic signal integrator comprising:

- With regard to claim 7, for non- symmetrical, calculated amplitudes of the particular values, their reference is suitably adjusted in the adjustment unit (FIG. 1, stabilization amplifier 26) (Column 4, lines 40-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the displacement detection apparatus including an error correction system of Tanaka et al. to incorporate the teaching of a non- symmetrical signal being suitably adjusted in the adjustment unit taught by Farrow since Farrow teaches that such an arrangement is beneficial to provide a sufficiently large average DC value of the signal at the

output to cancel the effective input offset voltage of integrating amplifier as disclosed in column 4, lines 40-51.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. in view of Ishii et al. (EP 0394942 A2).

Tanaka et al. teaches all that is claimed as discussed in the above rejection of claims 1, 3 and 4, but he does not specifically teach the following:

- Two values phase-shifted by 90° and an additional value phase- shifted by 180° are created from the phase-shifted signals and used for evaluation.

However, Ishii et al. teaches a signal insertion processor and encoder using processor comprising:

- With regard to claim 12, two values phase-shifted by 90° and an additional value phase- shifted by 180° are created from the phase-shifted signals and used for evaluation (From column 2, line 51 to column 3, line 40).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the displacement detection apparatus including an error correction system of Tanaka et al. to incorporate the teaching of two values phase-shifted by 90° and an additional value phase- shifted by 180° being created from the phase-shifted signals and used for evaluation taught by Ishii et al. since Ishii et al. teaches that such an arrangement is beneficial to provide an insertion device for inserting a first sine wave signal having an inversion means for inverting the first sine wave signal to produce a fourth sine wave signal having a phase difference of 180 degrees from the first sine wave signal as disclosed from column 2, line 51 to column 3, line 40.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant's attention is invited to the followings whose inventions disclose similar devices.

- MacMillan (US 3,019,390 A) teaches a phase measuring system.
- Ashida (US 4,451,782) teaches a spectrum analyzer.
- Fairley et al. (US 5,019,786) teach a phase measurement system using a dithered clock.
- Tachikawa (US 5,329,359) teaches parts mounting inspection method.
- Girgis (US 5,343,404) teaches a precision digital multimeter and waveform synthesizer for multi-signals with distorted waveforms embedded in noise.
- Kuchel (US 5,361,312) teaches a method and apparatus for phase evaluation of pattern images used in optical measurement.
- Bailey (US 5,408,192) teaches a monolithic broadband phase shifting circuit for analog data signals.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai-An D. Nguyen whose telephone number is 571-272-2170. The examiner can normally be reached on M-F (8:00 - 5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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